CLAIMS

1. Process for making a virtual show area (1), and particularly a virtual shop, at nominale scale in which the user (2) is immersed in an environment corresponding to the environment of a real show area, particularly concerning the dimensions (3, 4), the distances (5) and the field of vision (6)
the said process comprising the following steps:
    -   the basic image representing a display case (20) at nominal scale, particularly shelves (21), is broken down into a predetermined number of precalculated sub-images (20a, 20b, 20c, 20d, 20e, 20f),
    -   the precalculated sub-images (20a, 20b, 20c, 20d, 20e, 20f) are projected without overlap onto a screen (9) using several video projectors (8a, 8b, 8c, 8d, 8e, 8f), particularly six, to form a high-resolution image with the real dimensions of a display case (20),
    -   the said video projectors (8a, 8b, 8c, 8d, 8e, 8f) are synchronized by means of at least one personal computer (10),
    such that the high-resolution image built up from the projected sub-images (20a, 20b, 20c, 20d, 20e, 20f) by the video projectors (8a, 8b, 8c, 8d, 8e, 8f) forms a virtual display case (20),

the said process also comprising the following steps:

- a graphic model of one of the objects (22) presented on the display case (20) is created in three dimensions,

- the said virtual object (22) is manipulated by means of a user-virtual display case interface (14, 15),

such that, as in a real show area, the user can pick up the 3D representation of the virtual object (22) on the display case (20), move it and turn it in all directions while keeping the display case (20) within his field of vision in the background at nominal scale alongside the other objects (23) presented on it.

2. Process according to claim 1, such that:

- the said video projectors (8a, 8b, 8c, 8d, 8e, 8f) are synchronized by means of several networked personal computers (10a, 10b, 10c), and particularly three.

3. Process according to claim 1 such that the necessary calculation power is reduced without reducing the realism of the virtual show area, by:

- manipulating a single modelled 3D object (22) during the manipulation phase.

4. Process according to claim 1 such that a modelled 3D object is manipulated:

- by sensing the movements of the user's hand(s) by means of a three-dimensional positioning sensor (15) with six degrees of freedom, connected (17) to the user - virtual display case interface (14);

the said user - virtual display case interface being in the form of a trolley (14) with the same characteristics as the trolleys used in show areas.

5. Process according to claim 4, such that the three-dimensional positioning sensor is in the form of a manipulable object, particularly a parallelepiped or a ball (15) that the user (2) holds in his or her hand.

6. Process according to claim 1, such that the user – virtual display case interface (14) comprises control means (16) that the user can use to indicate the display case on which the object(s) that he or she wants to see and/or manipulate are located,
the said process also comprising the step in which
- images (20a, 20b, 20c, 20d, 20e, 20f) projected onto the screen (9) are changed as a function of information provided by the user (2),
such that the process can simulate a movement of the user in the show area.

7. Process according to claim 6, such that the control means (16) comprise position and/or orientation sensors, particularly located on the trolley;
the said process also comprising the step in which
- the user's position and/or orientation relative to the virtual display case can be changed.

8. Virtual show area, particularly a virtual shop (1), at nominal scale, such that the user (2) is immersed in an environment corresponding to the environment of a real show area, particularly concerning the dimensions (3, 4), distances (5) and the field of vision (6),
the said virtual show area comprising:
- first calculation means (7) to break down the basic image (20) representing a display case at nominal scale, particularly shelves (21), in a predetermined number of precalculated sub-images (20a, 20b, 20c, 20d, 20e, 20f),
- several video projectors (8a, 8b, 8c, 8d, 8e, 8f), advantageously six, designed to project the precalculated sub-images (20a, 20b, 20c, 20d, 20e, 20f) onto a screen without overlap, to form a high-resolution image with the real dimensions of a display case (20),

- synchronization means to synchronize the said video projectors using several, and advantageously three, networked personal computers (10a, 10b, 10c),

such that the high-resolution image (20) composed of sub-images (20a, 20b, 20c, 20d, 20e, 20f) projected by the video projectors (8a, 8b, 8c, 8d, 8e, 8f) forms a virtual display case (20),
the virtual display area also comprising:

- second calculation means (8) for calculating a graphic model of one of the objects (22) displayed on the display case (20), in three dimensions,

- a user – virtual display case interface (14) comprising manipulation means (15) for virtually manipulating the said object (22),

such that, like in a real display area, the user can pick up the 3D representation of the virtual object (22) on the display case, move it and rotate it in all directions while the display case (20) and other objects (23) presented with the display case remain in the background within his field of vision at nominal scale.

9. Virtual show area according to claim 8, such that it comprises several, and advantageously three, networked personal computers (10a, 10b, 10c), to control the synchronization of the said video projectors (8a, 8b, 8c, 8d, 8e, 8f).

10. Virtual show area according to claim 8, such that in order to reduce the necessary calculation power without reducing the realism of the virtual show area,

- the manipulation means only manipulate one modelled 3D object (22) during the manipulation phase.

11. Virtual show area according to claim 9, such that the user – virtual display case interface (14) comprises a three-dimensional positioning sensor with six degrees of freedom (15), so that the movements of the hand(s) of the user (2) can be sensed and a modelled 3D object (22) can be manipulated;

the said user - virtual display case interface being specifically in the form of a trolley (14) with the same characteristics as trolleys used in show areas.

12. Virtual show area according to claim 11, such that the three-dimensional positioning sensor is in the form of a manipulable object, particularly a parallelepiped or a ball (15) that the user holds in his or her hand.

13. Virtual show area according to claim 8, such that the user - virtual display case interface comprises control means (16) that the user (2) can use to indicate the display case on which the objects that he or she wants to see and/or manipulate are located;

the said virtual show area comprises third calculation means (17a, 17b, 17c) for changing the images (20a, 20b, 20c, 20d, 20e, 20f) projected on the screen (9) as a function of the information supplied by the user (2);

such that the screen (9) simulates a displacement of the user (2) in the show area.

14. Virtual show area according to claim 13, such that the control means (16) include position and/or orientation sensors, particularly located on the trolley.